Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application. Claims 1 and 8 are amended. Claims 15-27 are added.

Listing of Claims:

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1.   (currently amended) A method for tracking an object among a plurality of image frames, the object moving relative to a background, wherein portions of the background that are initially hidden, become observable during tracking, the method comprising the steps of:

defining a background mask for each one frame among a plurality of image frames, including a current image frame, the background mask of a given image frame comprising background pixels, the background pixels of the given image frame being within observable portions of the background for the given image frame;

deriving maintaining a background model of background pixels from the plurality of image frames, which have been observable in at least three consecutive image frames; wherein for each image frame, background pixels within an observable portion of the background are identified, and wherein an identified background pixel is included in the background model only after being observable within the background for at least three consecutive image frames;

classifying each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame and a subsequent image frame;

defining a foreground mask for the current image frame as being pixels not in the background mask for said current image frame; and

identifying the object as being the pixels within the foreground mask for the current image frame.

2.   (original) The method of claim 1, further comprising the step of performing a mask filtering operation on the background mask of the current image frame to decide whether to change a pixel classification from being a background pixel in the background mask to being a foreground pixel in the foreground mask of the current image frame.

3.   (original) The method of claim 1, further comprising the step of performing a mask filtering operation on the foreground mask of the current image frame to decide whether to change a pixel classification from being a foreground pixel in the foreground mask to being a background pixel in the background mask of the current image frame.

4.   (original) The method of claim 1, further comprising, for each one pixel of a current image frame, the step of predicting a background value for said one pixel based upon a predicted background value of said one pixel from the prior image frame, a pixel value of said one pixel from the current image frame, and a mixing factor.

5.   (original) The method of claim 4, in which the step of classifying said each one pixel of the current image frame is based in part on the predicted background value for said each one pixel.

6.   (original) The method of claim 1, in which the step of classifying comprises identifying an event from the group of events comprising: prospectively include said one pixel in the background mask for the current image frame; motion is detected in the immediate past for said one pixel; motion is detected in the immediate future for said one pixel; prospectively include said one pixel in the foreground pixel for the current image frame; and said one pixel is not to be updated in the background model.

7.   (original) The method of claim 1, in which the step of classifying comprises identifying an event from the group of events comprising: prospectively include said one pixel in the background mask for the current image frame; a first degree of motion is detected in the immediate past for said one pixel; the first degree of motion is detected in the immediate future for said one pixel; a second degree of motion is detected in the immediate past for said one pixel; the second degree of motion is detected in the immediate future for said one pixel; prospectively include said one pixel in the foreground pixel for the current image frame; and said one pixel is not to be updated in the background model.

8.   (currently amended) An apparatus for tracking an object among a plurality of image frames, the apparatus receiving an initial estimate of the object for an initial image frame, the object moving relative to a background, wherein portions of the background that are initially hidden, become observable during tracking, the apparatus comprising:

a background model derived from the plurality of image frames, ~~of values for a plurality of background pixels which have been observable in at least three consecutive image frames;~~ wherein for each image frame, background pixels within an observable portion of the background are identified, and wherein an identified background pixel is included in the background model only after being observable within the background for at least three consecutive image frames;

a processor which classifies each one pixel of the current image frame as being a background pixel or a foreground pixel based on a current state of the background model, the current image frame, and at least one of a prior image frame or a subsequent image frame, the processor identifying a background mask for the current image frame; and

a foreground mask for the current image frame formed as being pixels not in the background mask for said current image frame, wherein the object being tracked is identified as corresponding to the pixels within the foreground mask of the current image frame.

9.   (original) The apparatus of claim 8, further comprising a filter which filters the background mask of the current image frame to decide whether to change a pixel classification from being a background pixel in the background mask to being a foreground pixel in the foreground mask of the current image frame.

10.   (original) The apparatus of claim 8, further comprising a filter which filters the foreground mask of the current image frame to decide whether to change a pixel classification from being a foreground pixel in the foreground mask to being a background pixel in the background mask of the current image frame.

11.   (original) The apparatus of claim 8, in which the processor predicts a background value for said each one pixel based upon a predicted background value of said each one pixel from the prior image frame, a pixel value of said each one pixel from the current image frame, and a mixing factor.

12.   (original) The apparatus of claim 11, in which the processor classifies said each one pixel of the current image frame based in part on the predicted background value for said each one pixel.

13.   (original) The apparatus of claim 8, in which the classifying by the processor comprises identifying an event from the group of events comprising: prospectively include said one pixel in the background mask for the current image frame; motion is detected in the immediate past for said one pixel; motion is detected in the immediate future for said one pixel; prospectively include said one pixel in the foreground pixel for the current image frame; and said one pixel is not to be updated in the background model.

14.   (original) The apparatus of claim 8, in which the classifying by the processor comprises identifying an event from the group of events comprising: prospectively include said one pixel in the background mask for the current image frame; a first degree of motion is detected in the immediate past for said one pixel; the first degree of motion is detected in the immediate future for said one pixel; a second degree of motion is detected in the immediate past for said one pixel; the second degree of motion is detected in the immediate future for said one pixel; prospectively include said one pixel in the foreground

pixel for the current image frame; and said one pixel is not to be updated in the background model.

15. (new) A method for tracking an object among a plurality of image frames, the method comprising the steps of:

defining a background mask for each one frame among a plurality of image frames, including a current image frame, the background mask of a given image frame comprising background pixels, the background pixels of the given image frame being observable for the given image frame;

maintaining a background model of background pixels which have been observable in at least three consecutive image frames by predicting, for each one pixel of a current image frame, a background value for said one pixel based upon a predicted background value of said one pixel from the prior image frame, a pixel value of said one pixel from the current image frame, and a mixing factor for weighting the background value of said one pixel from the prior image frame;

classifying each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame and a subsequent image frame;

defining a foreground mask for the current image frame as being pixels not in the background mask for said current image frame; and

identifying the object as being the pixels within the foreground mask for the current image frame.

16.   (new) The method of claim 15, in which the step of classifying said each one pixel of the current image frame is based in part on the predicted background value for said each one pixel.

17.   (new) The method of claim 15, further comprising the step of performing a mask filtering operation on the background mask of the current image frame to decide whether to change a pixel classification from being a background pixel in the background mask to being a foreground pixel in the foreground mask of the current image frame.

18.   (new) The method of claim 15, further comprising the step of performing a mask filtering operation on the foreground mask of the current image frame to decide whether to change a pixel classification from being a foreground pixel in the foreground mask to being a background pixel in the background mask of the current image frame.

19.   (new) A method for tracking an object among a plurality of image frames, the method comprising the steps of:

defining a background mask for each one frame among a plurality of image frames, including a current image frame, the background mask of a given image frame comprising background pixels, the background pixels of the given image frame being observable for the given image frame;

maintaining a background model of background pixels which have been observable in at least three consecutive image frames;

classifying each one pixel of the current image frame as being a background

pixel or a foreground pixel based on the background model, the current image frame, and at

least one of a prior image frame and a subsequent image frame;

defining a foreground mask for the current image frame as being pixels not in

the background mask for said current image frame; and

identifying the object as being the pixels within the foreground mask for the

current image frame;

wherein the step of classifying comprises identifying an event from the group

of events comprising: prospectively include said one pixel in the background mask for the

current image frame; motion is detected in the immediate past for said one pixel; motion is

detected in the immediate future for said one pixel; prospectively include said one pixel in the

foreground pixel for the current image frame; and said one pixel is not to be updated in the

background model.

20.   (new) The method of claim 19, further comprising the step of

performing a mask filtering operation on the background mask of the current image frame to

decide whether to change a pixel classification from being a background pixel in the

background mask to being a foreground pixel in the foreground mask of the current image

frame.

21.   (new) The method of claim 19, further comprising the step of

performing a mask filtering operation on the foreground mask of the current image frame to

decide whether to change a pixel classification from being a foreground pixel in the

foreground mask to being a background pixel in the background mask of the current image

frame.

22.   (new) A method for tracking an object among a plurality of image
frames, the method comprising the steps of:

defining a background mask for each one frame among a plurality of image
frames, including a current image frame, the background mask of a given image frame
comprising background pixels, the background pixels of the given image frame being
observable for the given image frame;

maintaining a background model of background pixels which have been
observable in at least three consecutive image frames;

classifying each one pixel of the current image frame as being a background
pixel or a foreground pixel based on the background model, the current image frame, and at
least one of a prior image frame and a subsequent image frame;

defining a foreground mask for the current image frame as being pixels not in
the background mask for said current image frame; and

identifying the object as being the pixels within the foreground mask for the
current image frame; and

wherein the step of classifying comprises identifying an event from the group
of events comprising: prospectively include said one pixel in the background mask for the
current image frame; a first degree of motion is detected in the immediate past for said one
pixel; the first degree of motion is detected in the immediate future for said one pixel; a
second degree of motion is detected in the immediate past for said one pixel; the second
degree of motion is detected in the immediate future for said one pixel; prospectively include
said one pixel in the foreground pixel for the current image frame; and said one pixel is not to
be updated in the background model.

23.   (new) The method of claim 22, further comprising the step of performing a mask filtering operation on the background mask of the current image frame to decide whether to change a pixel classification from being a background pixel in the background mask to being a foreground pixel in the foreground mask of the current image frame.

24.   (new) The method of claim22, further comprising the step of performing a mask filtering operation on the foreground mask of the current image frame to decide whether to change a pixel classification from being a foreground pixel in the foreground mask to being a background pixel in the background mask of the current image frame.

25.   (new) An apparatus for tracking an object among a plurality of image frames, the apparatus receiving an initial estimate of the object for an initial image frame, the apparatus comprising:

a background model of values for a plurality of background pixels which have been observable in at least three consecutive image frames;

a first processor which predicts a background value for said each one pixel based upon a predicted background value of said each one pixel from the prior image frame, a pixel value of said each one pixel from the current image frame, and a mixing factor for weighting the background value of said one pixel from the prior image frame;

a second processor which classifies each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame or a subsequent image frame, the processor identifying a background mask for the current image frame; and

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a foreground mask for the current image frame formed as being pixels not in the background mask for said current image frame, wherein the object being tracked is identified as corresponding to the pixels within the foreground mask of the current image frame.

26.   (new) An apparatus for tracking an object among a plurality of image frames, the apparatus receiving an initial estimate of the object for an initial image frame, the apparatus comprising:

a background model of values for a plurality of background pixels which have been observable in at least three consecutive image frames;

a processor which classifies each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame or a subsequent image frame, the processor identifying a background mask for the current image frame; and

a foreground mask for the current image frame formed as being pixels not in the background mask for said current image frame, wherein the object being tracked is identified as corresponding to the pixels within the foreground mask of the current image frame;

wherein the processor identifies an event from the group of events comprising: prospectively include said one pixel in the background mask for the current image frame; motion is detected in the immediate past for said one pixel; motion is detected in the immediate future for said one pixel; prospectively include said one pixel in the foreground pixel for the current image frame; and said one pixel is not to be updated in the background model.

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27.   (new) An apparatus for tracking an object among a plurality of image frames, the apparatus receiving an initial estimate of the object for an initial image frame, the apparatus comprising:

a background model of values for a plurality of background pixels which have been observable in at least three consecutive image frames;

a processor which classifies each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame or a subsequent image frame, the processor identifying a background mask for the current image frame; and

a foreground mask for the current image frame formed as being pixels not in the background mask for said current image frame, wherein the object being tracked is identified as corresponding to the pixels within the foreground mask of the current image frame;

wherein the processor identifies an event from the group of events comprising: prospectively include said one pixel in the background mask for the current image frame; a first degree of motion is detected in the immediate past for said one pixel; the first degree of motion is detected in the immediate future for said one pixel; a second degree of motion is detected in the immediate past for said one pixel; the second degree of motion is detected in the immediate future for said one pixel; prospectively include said one pixel in the foreground pixel for the current image frame; and said one pixel is not to be updated in the background model.

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